tion does not agree with the author's observations, Julius proposes another, namely, that the phenomenon is produced by anomalous dispersion and that in fact the free ions, which according to Ebert and Lenard are most numerous in the upper strata of air, are in general the cause of the terrestrial absorption. In this way the rarity of the phenomenon, its dependence on meteorological conditions, and its slow diminution of duration with the altitude above the horizon may be accounted for. But H. Schering remarks that independent of the fact that, according to the latest measurements in free balloons made by Luedeling as well as by Gerdien, an increase of ions at the greatest altitudes is not probable, there exists such a great difference in the magnitude of the number of ions and the number of molecules in a cubic centimeter that we ought not to expect such a spectral effect as Julius assumes even if the ionization were many thousand times greater than is ordinarily found. In fact, the average number of ions in a cubic centimeter is only 1×10^3, whereas the number of molecules is 2×10^{19}.

BALL LIGHTNING.

A letter from Mrs. A. E. Russell, of Paducah, Ky., reports the following phenomenon which seems to be as genuine a case of ball lightning as any that has hitherto been described:

My niece and I were sitting in my front hall on July 16, 1905, when suddenly, without warning, what seemed like a big ball of fire passed between our heads. My niece's head was not distant more than six inches from our telephone box. She experienced no shock, while I was blinded by it for half a minute.

The front and back hall doors were screened[1] but they showed no sign of any lightning having touched them. A tree in the back yard about ten yards from the back hall door had a round hole made in the bark with a dent in the wood just as if a cannon ball had been shot against it. The three horses standing near the tree were knocked down; the horse standing in a straight line between the tree and the house seemed dead for a long while.

My niece says that there had been a low rumbling noise of thunder just previous to the lightning, but I did not hear it. A neighbor who had left my house two minutes before and was on the road says she heard no thunder and saw no lightning until suddenly a terrific explosion seemed to occur just over her head; she was blinded and saw nothing more.

I have witnessed the lightning strike trees three times on our front lawn, but I never before saw a ball of fire.

CORRIGENDA.

MONTHLY WEATHER REVIEW for 1904, Vol. XXXII, No. 13, Annual Summary, page 605, first column, line 41, for "levelings" read "altitude"; line 42, for "Prof. Joseph N. Le Conte" read "the director of the U. S. Geological Survey." For August, 1905, page 350, column 2, "Rivers and Floods," line 7, for "northern" read "southern."

THE WEATHER OF THE MONTH.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and V.

The mean barometric pressure for the month was highest over New England, the Middle Atlantic States, northern portion of the South Atlantic States, Ohio Valley and Tennessee, and lower Lake region, with the crest over northeastern West Virginia carrying a value of 30.11 inches. The mean pressure was lowest over southeastern California and southwestern Arizona, the minimum, 29.76 inches, occurring at Yuma.

The mean pressure for the month was .01 to .03 inch above the normal in Virginia, eastern West Virginia, and northwestern California; elsewhere it was below the normal, but with slight departures, except over northeastern California, west-central Nevada, Washington, northern Idaho, and northwestern Montana, where they ranged from —.05 to —.08 inch.

The mean pressure diminished from that of August, 1905, in southern Florida, western New Mexico, Arizona, Utah, Colorado, Wyoming, western South Dakota, Montana, except the northeastern portion, Washington, except the southeastern portion, western Oregon, and California, except the extreme northeastern portion; elsewhere the mean pressure increased. The decrease was greatest over western Washington, where it ranged from —.05 to —.12 inch; and the increase was most marked over the Atlantic States as far south as central North Carolina, lower Lake region, southern portion of the upper Lake region, central Mississippi and lower Missouri valleys, and the Ohio Valley and Tennessee, where it ranged from +.05 to +.09 inch.

TEMPERATURE OF THE AIR.

The mean temperature for the month was below the normal in New England, except southwestern Connecticut, northeastern and east-central New York, northeastern and southwestern Pennsylvania, northwestern West Virginia, western Arizona, California, except the east-central and northwestern portions, northwestern Nevada, extreme northwestern Oregon, and on the immediate coast of Washington; elsewhere it was above the normal. The negative departures were less than 1.0°, except in one instance in central California, while the positive departures generally were greater than 2.0°, and more than 4.0° in southwestern Kansas, east-central Nebraska, southeastern Wisconsin, north-central upper Michigan, western Minnesota, and North Dakota, and from +5.0° to +5.3° in eastern Montana.

The average temperatures for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	8	56.9	— 0.9	—12.2	—1.4
Middle Atlantic	12	67.1	+ 0.8	— 6.6	—0.7
South Atlantic	10	75.6	+ 2.4	— 2.8	—0.3
Florida Peninsula*	8	80.7	+ 1.5	+ 3.8	+0.4
East Gulf	9	77.8	+ 2.5	— 5.6	—0.6
West Gulf	7	78.6	+ 2.6	— 5.2	—0.6
Ohio Valley and Tennessee	11	69.6	+ 1.4	— 7.8	—0.9
Lower Lake	8	64.4	+ 1.3	— 9.7	—1.1
Upper Lake	10	62.2	+ 3.0	— 3.9	—0.4
North Dakota*	8	59.8	+ 2.6	+ 3.9	+0.4
Upper Mississippi Valley	11	67.0	+ 2.3	— 6.4	—0.7
Missouri Valley	11	67.7	+ 2.5	— 4.0	—0.4
Northern Slope	7	61.4	+ 3.3	+ 1.9	+0.2
Middle Slope	6	70.4	+ 2.7	— 4.4	—0.5
Southern Slope*	6	74.5	+ 2.5	— 9.6	—1.1
Southern Plateau*	13	69.7	+ 0.2	— 4.1	—0.5
Middle Plateau*	8	61.4	+ 0.5	+ 5.1	+0.6
Northern Plateau*	12	60.6	+ 2.8	+14.0	+1.6
North Pacific	7	58.2	+ 1.1	+10.4	+1.2
Middle Pacific	5	64.9	+ 0.4	+ 7.7	+0.9
South Pacific	4	67.8	— 0.5	+ 5.8	+0.6

* Regular Weather Bureau and selected cooperative stations.

Maximum temperatures of 80°, or higher, were reported from all sections, except the coast of Maine, the islands off Massachusetts and Rhode Island, the northern portions of New Hampshire and Vermont, the mountain regions of Colorado, and the northwestern portion of Washington; 90°, or higher, in the South Atlantic and Gulf States, Tennessee, except the mountain districts, lower Ohio Valley, southern portions of the upper Mississippi and Missouri valleys, and generally over the slope and Pacific regions, except along

[1] Light fly-screen doors for the summer season.—[Ed.]

the coast and portions of the Plateau region; and of 100°, or higher, from portions of southwestern Mississippi, eastern Louisiana, lower Rio Grande Valley, north-central Texas, western Oklahoma, south-central Kansas, southeastern New Mexico, western Arizona, and central and southeastern California, and of 110° to 118° in extreme southeastern California and western Arizona, except at Yuma.

Freezing temperatures occurred in sections of the northern tier of States, in the mountain regions of Pennsylvania and in the Rocky, Cascade, and Sierra Nevada mountain regions. Minimum temperatures of less than 20° were reported from Idaho and Colorado, and of one degree below zero from the station at Boca in the mountains of east-central California. Minimum temperatures somewhat higher than 60° occurred in the southern portions of the South Atlantic and Gulf States and of 70° to 73° in southern Florida.

By geographic districts the temperature was above the normal in all sections, except in New England and the south Pacific.

In Canada.—Prof. R. F. Stupart says:

The temperature was below the average in Quebec and over the greater portions of the Maritime Provinces and British Columbia; elsewhere in the Dominion it was above the average. The chief positive departures occurred in Manitoba and over the southern parts of Alberta and Saskatchewan and ranged from 3° to 5°, and the most marked negative departures were experienced in the vicinity of the Bay of Fundy and along the south shores of Nova Scotia where in many localities the deficiency was 3° and over.

PRECIPITATION.

Excesses of precipitation ranging from 3.0 to 8.0 inches occurred in eastern Kansas, northern and central Missouri, extreme western Iowa, eastern Nebraska, extreme western Florida, and southeastern Louisiana, and of 2.0 to 3.6 inches on the coast of Maine, in southeastern Vermont, eastern Massachusetts, southeastern New York, north-central Tennessee, northern Arizona, and northwestern Washington. Deficiencies of 2.0 to 4.4 inches occurred in extreme southern Wisconsin, northeastern Iowa, northwestern Louisiana, the extreme eastern portions of Texas and Tennessee, northeastern Alabama, northwestern and eastern Georgia, northeastern Florida, and the eastern portions of the Carolinas.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	8	4.91	158	+1.8	—2.5
Middle Atlantic	12	3.20	86	—0.5	—0.6
South Atlantic	10	2.51	48	—2.7	—5.8
Florida Peninsula*	8	8.52	109	+0.7	+5.2
East Gulf	9	4.55	121	+0.8	+0.9
West Gulf	7	2.06	51	—2.0	+2.2
Ohio Valley and Tennessee	11	2.56	86	—0.4	—3.0
Lower Lake	8	2.23	76	—0.7	—1.1
Upper Lake	10	3.18	91	—0.3	+1.0
North Dakota*	8	1.26	131	+0.3	+2.1
Upper Mississippi Valley	11	3.32	103	+0.1	—1.0
Missouri Valley	11	5.63	232	+3.2	+5.2
Northern Slope	7	0.88	90	—0.1	+2.6
Middle Slope	6	2.47	139	+0.7	+4.7
Southern Slope*	6	3.01	120	+0.5	+6.9
Southern Plateau*	13	1.65	194	+0.8	+5.8
Middle Plateau*	8	1.93	233	+1.1	+1.8
Northern Plateau*	12	1.15	100	0.0	—1.4
North Pacific	7	4.11	142	+1.2	—6.6
Middle Pacific	5	0.11	15	—0.6	—3.2
South Pacific	4	0.12	100	0.0	+3.1

*Regular Weather Bureau and selected cooperative stations.

By geographic districts the precipitation was normal in the northern Plateau and south Pacific districts; below normal in the Middle, South Atlantic, and west Gulf States, Ohio Valley and Tennessee, Lake region, and the northern slope and middle Pacific districts; elsewhere it was above the normal.

The distribution of total monthly precipitation is shown on Chart III.

In Canada.—Professor Stupart says:

The rainfall was above the average in British Columbia, except far north in the interior, the positive departures being very marked in many localities, especially in the lower mainland where New Westminster recorded 7.10 inches above the usual amount. In Alberta, except at Edmonton, where it was two-tenths of an inch above the average amount, the rainfall was generally deficient, Calgary reporting as much as an inch below the usual quantity. In Saskatchewan and Manitoba the precipitation was above the average in some localities and below in others, a positive departure of 3.10 inches at Qu'Appelle and a negative one of 0.90 inch at Medicine Hat were the most noteworthy departures. In Ontario from the Lake Superior district east almost to the boundary and including the Georgian Bay region the rainfall was usually well above the average, otherwise it was nearly everywhere deficient, especially over Lakes Erie and Ontario and their environs. Port Stanley recorded 1.70 inches below, Toronto, 1.0 inch below, Kingston, 0.90 inch below. In Quebec the average amount was exceeded in all localities, also in the Maritime Provinces, except at Halifax and its immediate vicinity, where a deficiency of over an inch was reported. The principal positive departures were Quebec, 1.0 inch; Father Point, 1.50 inches; Chatham, 2.60 inches; St. John, 2.10 inches; Fredericton, 1.90 inches; Charlottetown, 1.40 inches.

HUMIDITY.

The relative humidity was normal in New England, the South Atlantic States, and the south Pacific region; below normal in the Middle Atlantic States, Florida Peninsula, and the northern Plateau and middle Pacific regions; elsewhere it was above normal.

The averages by districts appear in the following table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	81	0	Missouri Valley	72	+ 6
Middle Atlantic	78	— 1	Northern Slope	56	+ 1
South Atlantic	80	0	Middle Slope	64	+ 6
Florida Peninsula	81	— 1	Southern Slope	65	+ 2
East Gulf	78	+ 2	Southern Plateau	50	+11
West Gulf	77	+ 3	Middle Plateau	43	+ 5
Ohio Valley and Tennessee	75	+ 3	Northern Plateau	46	— 6
Lower Lake	76	+ 3	North Pacific	81	+ 3
Upper Lake	80	+ 3	Middle Pacific	63	— 4
North Dakota	70	+ 4	South Pacific	66	0
Upper Mississippi Valley	79	+ 7			

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Hannibal, Mo	14	50	s.	North Head, Wash	25	77	sc.
Mount Tamalpais, Cal	16	55	nw.	Omaha, Nebr	15	54	nc.
Do	17	51	nw.	Sioux City, Iowa	15	50	sc.
Do	24	53	nw.	Tatoosh Island, Wash	1	53	e.
Do	26	54	nw.	Do	19	60	s.
Do	27	61	nw.	Do	24	51	sw.
Do	28	58	nw.	Do	25	50	s.
Do	29	62	nw.				

CLEAR SKY AND CLOUDINESS.

In the south Pacific and lower Lake regions there was an average of cloudiness; less than the average in the middle Pacific and upper Lake regions, Ohio Valley and Tennessee, and the west Gulf and south and middle Atlantic States. In the remaining districts there was more than the average cloudiness.

The distribution of clear sky is graphically shown on Chart IV, and the numerical values of average daylight cloudiness, both for individual stations and by geographic districts, appear in Table I.

The averages for the various districts, with departures from the normal, are shown in the following table:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.6	+ 0.6	Missouri Valley	4.5	+ 0.5
Middle Atlantic	4.5	— 0.3	Northern Slope	4.2	+ 0.2
South Atlantic	4.6	— 0.2	Middle Slope	4.2	+ 1.0
Florida Peninsula	5.6	+ 0.1	Southern Slope	4.2	+ 0.6
East Gulf	4.5	+ 0.1	Southern Plateau	3.0	+ 0.7
West Gulf	3.8	— 0.5	Middle Plateau	3.4	+ 0.9
Ohio Valley and Tennessee	4.3	— 0.1	Northern Plateau	4.4	+ 0.3
Lower Lake	4.8	0.0	North Pacific	6.9	+ 1.6
Upper Lake	5.0	— 0.1	Middle Pacific	2.6	— 0.2
North Dakota	4.5	+ 0.2	South Pacific	2.5	0.0
Upper Mississippi Valley	5.0	+ 0.8			

DESCRIPTION OF TABLES AND CHARTS.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

For description of tables and charts see page 20 of REVIEW for January, 1905.